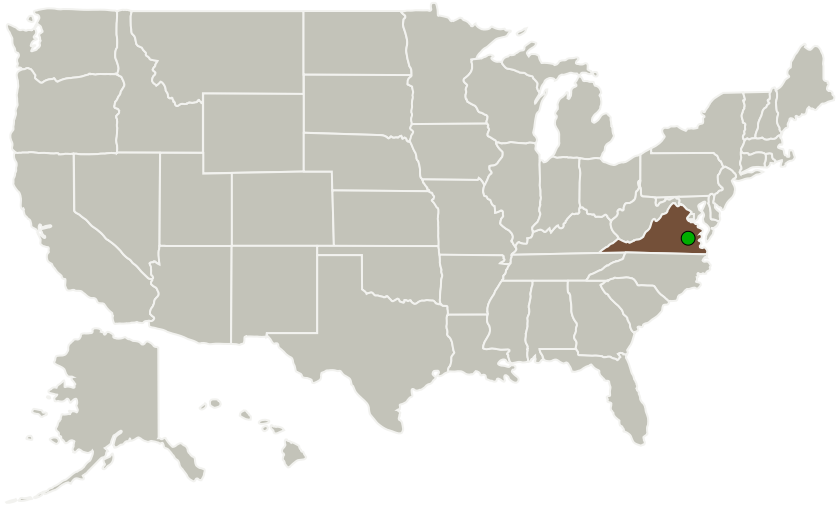
Terminal Descent Lidar System, Phase I

Completed Technology Project (2015 - 2015)

Project Introduction

A laser based terminal descent sensor is proposed that will provide real-time ground-relative altitude, attitude, and vertical velocity at high data rates to a navigation computer of a vehicle during landing on a near earth object or planetary body. The operational range of the sensor in Mars, for example, can exceed ten kilometers through touchdown, and may conceivably be a low mass, volume, and cost replacement for the Terminal Descent Sensor (TDS) on missions like the Mars Science Laboratory (MSL). The sensor is compact, rugged, and can be easily integrated with other NASA smart sensor systems coming of age, such as the Autonomous Landing and Hazard Avoidance Technology (ALHAT) project or JPL's Lander Vision System (LVS). During Phase I we propose to detail the complete system design, model the transmitter laser, and test key components that will benchmark our model in preparation of a full system development in Phase II.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Coherent Applications, Inc.	Lead Organization	Industry Minority-Owned Business	Hampton, Virginia
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

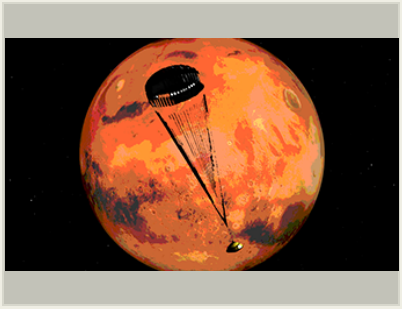


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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

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Primary U.S. Work Locations
Virginia

Project Transitions

June 2015: Project Start

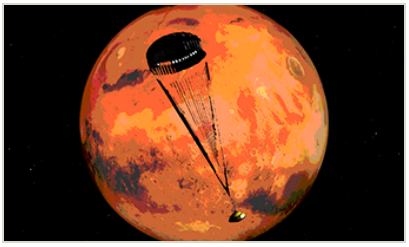
December 2015: Closed out

Closeout Summary: Terminal Descent Lidar System, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/141172)*

Images



Briefing Chart Image
Terminal Descent Lidar System, Phase I
(https://techport.nasa.gov/image/131013)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Coherent Applications, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

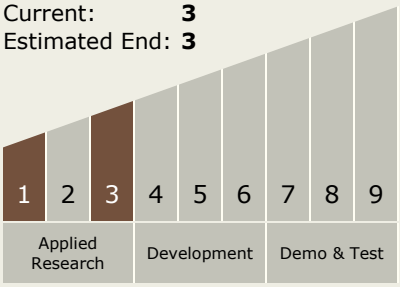
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Diego Pierrottet

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Terminal Descent Lidar System, Phase I

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Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.1 Sensing and Perception
    - TX04.1.2 State Estimation

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System